

**MANAGEMENT OF TARNISHED PLANT BUG IN MS COTTON PRODUCTION SYSTEMS**

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**Abstract**

The tarnished plant bug (TPB), *Lygus lineolaris* (Palisot de Beauvois), is a major pest of cotton in the midsouthern United States, including the states of Arkansas, Mississippi, Louisiana, western Tennessee, and southeastern Missouri. Insecticides provide the primary form of control for this pest, and numerous applications are required annually. Currently, there is limited research focusing on TPB termination timing impacts in cotton. The majority of sprays are made later in the growing season to avoid significant yield losses associated with TPB damage. In 2019, experiments were conducted in multiple locations across the Mississippi Delta to determine the impact of TPB infestation timings on cotton yield and to determine when the greatest yield losses occur during bloom.

**Introduction**

The tarnished plant bug is a severe economic pest of cotton, feeding on young reproductive structures of the crop such as terminals, squares, and small bolls. Traditionally, in the state of Mississippi growers make on average five to seven applications per year targeting TPB driving up production costs and potentially negatively impacting insect resistance management. Many of these applications occur in the later portion of the growing season and previous research has shown yield may not negatively be affected when altering thresholds around the third to fourth week of bloom (Wood et al. 2016). This study further evaluates implantation of an established dynamic threshold by altering the current management recommendations in the later weeks of bloom.

**Materials and Methods**

Experiments were conducted in four locations, Glendora, MS, Sidon, MS, and an early and late plant date at the Delta Research and Extension Center (DREC) in Stoneville, MS, throughout the Mississippi Delta region to evaluate the potential implementation of a dynamic threshold for TPB. Treatments included an untreated control, automatic weekly treatments, current threshold, and various dynamic treatments (Figure 1). The Dynamic treatments will consist of plots treated on threshold weeks 1-4 of bloom and not treated weeks 5 and 6 (Dynamic 1), treated on threshold weeks 1-4 of bloom and a 2X threshold weeks 5 and 6 (Dynamic 2), treated on threshold weeks 1-3 of bloom and a 2X threshold weeks 4-6 (Dynamic 3), treated on threshold weeks 1-3 of bloom with a 2X threshold week 4 and 5 and 3X threshold week 6 (Dynamic 4), and treated on threshold weeks 1-3 of bloom with a 2X threshold week 4 and a 3X threshold on weeks 5 and 6 (Dynamic 5). All treatments were arranged in a randomized complete block design and replicated 4 times at each location. Plots were sampled weekly after first bloom using a standard drop cloth making two drops per plot. If a plot exceeded the dynamic threshold for the respective week an application was made. All data were analyzed in SAS PROC MIXED using Fishers LSD.

**Results and Discussion**

The greatest yield loss occurred in the untreated check plots and all other treatments yielded significantly higher except for Dynamic 4. This suggests that there may be potential to modify the current TPB threshold by increasing the economic threshold around the fourth week of bloom. These data demonstrate the importance of scouting and adhering to TPB thresholds during the early flowering period.

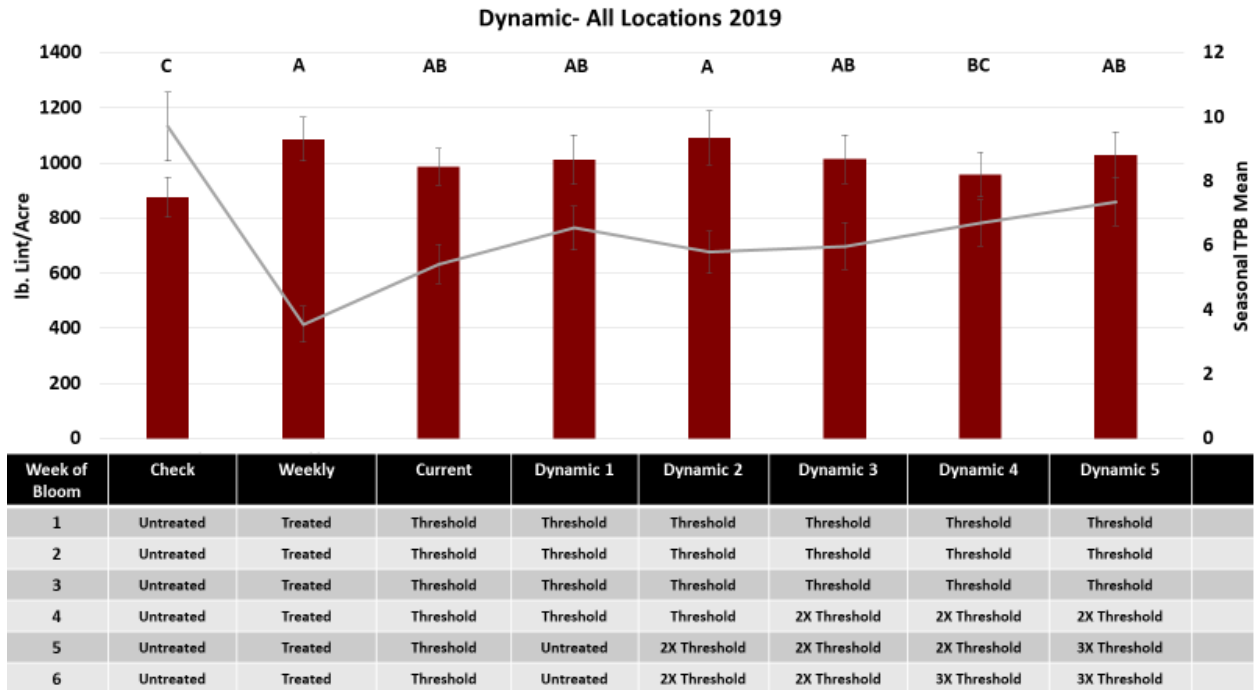


Figure 1. Lint yield (y axis) and seasonal plant bug means (z axis) across four Delta locations in 2019.

\*Means that do not share common letters differ significantly at  $P = 0.05$

### Summary

From this research, altering the current management recommendations for TPB control in the later weeks of bloom may be possible depending on the situation. However, 2019 was a relatively light year for TPB across the Mississippi delta and more research under higher pest densities is needed to determine how infestations rates may impact termination timing.

### Acknowledgments

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### References

Wood, W., et al. "Susceptibility of Flowering Cotton to Damage and Yield Loss from Tarnished Plant Bug (Hemiptera: Miridae)." *Journal of Economic Entomology*, vol. 109, no. 3, 2016, pp. 1188–1195.